

**KINGSTON TECHNOLOGY  
FAST ETHERX STACKABLE  
24-PORT 10/100TX  
RACK-MOUNTABLE  
DUAL-SPEED HUB  
USER'S GUIDE**

**MODEL: KND2415TX**

# **Kingston Technology's Fast EtheRx Stackable 10/100TX Rack-Mountable Dual Speed Hub User's Guide**

**Part No. 4460174-001.A00**



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## **Important Safety Instructions**

1. Read all these instructions.
2. Save these instructions for later use.
3. Follow all warnings and instructions marked on the product.
4. Do not use this product near water.
5. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
6. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risk. Refer all servicing to service personnel.

## **Wichtige Sicherheitshinweise**

1. Diese Hinweise sollten vollständig durchgelesen werden.
2. Diese Hinweise für einen späteren Gebrauch aufbewahren.
3. Allen auf dem Gerät angebrachten Warnungen und Hinweisen folgen.
4. Das Gerät nicht in der Nähe von Wasser verwenden.
5. Das Gerät nur mit dem Aufkleber bezeichneten Netzspannung betreiben. Bei Fragen über die Art der Netzspannung sollte der Händler oder das Energieversorgungsunternehmen zu rate gezogen werden.
6. Nicht versuchen das Produkt selbst zu reparieren. In allen Produkten existieren gefährliche elektrische Spannungen. Nicht das Gehäuse öffnen.

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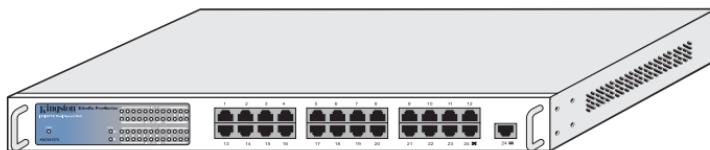
# Introduction

Intended Audience: This manual assumes that the user has a general working knowledge of networking principles and is familiar with network systems in general.

Congratulations on the purchase of your Kingston Fast EtheRx Stackable 10/100TX Rack-Mountable Dual Speed hub. The KND2415TX is a full 19" rack-mount unit. The Fast EtheRx Stackable 10/100TX Dual-Speed hub conforms to IEEE802.3u 100BASE-TX, IEEE802.3i 10BASE-T, and IEEE802.3 CSMA/CD standards. A maximum of four KND2415TX units can be stacked together.

**IMPORTANT: The KND2415TX can only be stacked with other KND2415TX units. Stacking the unit with any other model hub may cause damage to the units.**

For ease of installation, the Fast EtheRx Stackable Dual Speed hub offers twenty-four (24) UTP ports that auto-negotiate 10/100Mbps operation and an uplink port that allows the last UTP port on the hub to support both crossover and straight-through cabling. Ideal for inter-connecting 10BASE-T Ethernet networks with 100BASE-TX Fast Ethernet networks, the Fast EtheRx Dual-speed hubs can also be used as simple stand-alone 10BASE-T or 100BASE-TX repeaters. For easy trouble-shooting, the front panel includes a variety of diagnostic LEDs such as Power, Collision for 10Mbps and 100Mbps, 100TX, Link, and Activity status.



**Fig. 1-1 KND2415TX**

## Special Features

- Conforms to IEEE802.3u 100BASE-TX, IEEE802.3i 10BASE-T, and IEEE802.3 CSMA/CD standards
- Inter-connects 10BASE-T Ethernet networks with 100BASE-TX Fast Ethernet networks
- Works as a simple 100BASE-TX or 10BASE-T repeater 10/100BASE-TX Class compliant repeater
- Stacking ports for stacking up to four (4) hubs maximum
- 24 UTP ports that auto-negotiate 10/100TX operation
- 24 100TX LEDs for 100Mbps speed detection
- 24 Link / Activity status LEDs for easy troubleshooting
- Individual collision LEDs for both 10Mbps and 100Mbps collision detection
- 1 Power LED for power status
- Automatic port partitioning / reconnection
- Uplink port that supports both crossover and straight-through cable wiring
- Internal auto-sensing power supply operating at 100-240VAC (50/60Hz)
- Desktop or rack-mountable

## Package Contents

The Fast EtheRx Dual-Speed package should contain the following items:

- KND2415TX Dual Speed Hub
- 50-pin Shielded Stacking Cable
- AC Power Cord
- Mounting kit including:
  - (2) Angle Brackets
  - (8) Mounting Bracket Screws
  - (4) 10/32" Rack-Mount thumb screws
  - (4) Rubber feet
- User's Guide

If any of the items are missing or damaged, please contact your Kingston dealer for a replacement. Be sure the items you receive are genuine Kingston Technology products. If the Kingston name and logo are not on the front panel of the unit, it's not a genuine Kingston product.

## Design Features

The Fast EtheRx dual-speed hub complies with the full set of repeater basic functions as defined by IEEE802.3u 100BASE-TX, IEEE802.3i 10BASE-T, and IEEE802.3 CSMA/CD standards.

### Repeater Functions

If any single port senses the start of a valid packet on its receiving line, the dual-speed hub will re-transmit the received data to all other ports on the network. The re-transmission of packets complies with the IEEE 802.3 specification in terms of preamble structure, voltage amplitude, and timing characteristics.

### Auto-Negotiation

Auto-Negotiation provides the means of automatically establishing a link by detecting the link capabilities of the connected device on the network to select the best operational mode available (i.e. 10/100Mbps selection)

### Receive Jabber Protection

The dual-speed hub uses a Receive Jabber Protection scheme to ensure that the network is not disabled due to reception of excessively long data packets.

### Collision-Handling

The dual-speed hub will detect and respond to collision conditions as outlined in the IEEE 802.3 specifications.

### Error-Handling

With 100BASE-TX Fast Ethernet, the new error-handling feature prevents sub-standard links from generating streams of false carrier and interfering with other links.

### Automatic Port Partitioning / Reconnection

If any of the ports on the dual-speed hub experience excessive collisions, or faulty conditions, that particular port can be partitioned. Once partitioned, the hub will continue to monitor that port. If the error conditions have been corrected or a good data packet is received or transmitted without a collision, the hub will automatically reconnect that port to the network.

# Hardware Installation

Before you begin installing network cables, please take a few minutes to familiarize yourself with the dual-speed hub. See the diagram below:

## Front Panel

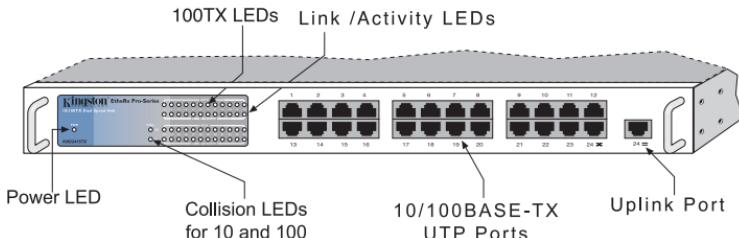


Fig. 3-1 Front Panel

### Power LED

The green LED indicates the power status. The LED will light up when the AC power connector is properly connected to a power source.

### Collision LEDs

There are two (2) separate collision LEDs for both 10Mbps and 100Mbps segments. If a collision is detected on a 10Mbps segment, the “10” LED will flash amber. If a collision is detected on a 100Mbps segment, the “100” LED will flash amber. Collisions occur when 2 or more ports receive data simultaneously.

### 100TX (Speed-Detection) LEDs

The 100TX LED lights up when 100Mbps operation is detected. The 100TX LED will not light up if 10Mbps operation is detected.

### Link / Activity LEDs

The LINK / ACTIVITY LEDs service both 10BASE-T and 100BASE-TX operation. A steady green light indicates that a good link has been established. A flashing green light indicates that data is being received.

If the Link LED does not display a steady green link light, please check the following:

1. Make sure the power is turned on for both the PC and EtherRx hub.
2. Verify that the correct network drivers have been loaded on the PC. Some network adapters require the drivers to be loaded to establish a proper link.
3. Make sure the correct cable type is selected.

4. Make sure the cable is wired properly and connected on both ends.
5. If steps 1 through 4 are correct, the cable may be defective or not wired correctly. Please refer to Appendix A for pin assignments and Appendix B for cabling guidelines.

## 10/100TX UTP Ports

The twenty-four (24) 10/100TX UTP ports auto-negotiate both 10BASE-T and 100BASE-TX connections. All ports like all normal hub ports are configured as MDI-X. However, port 24, supports both MDI-X and MDI port configuration.

### Uplink Port

The uplink port provides cabling flexibility on UTP port 24 for connecting to a workstation NIC or cascading to another hub. Although these ports have two (2) UTP connections, MDI and MDI-X, only one port may be used.

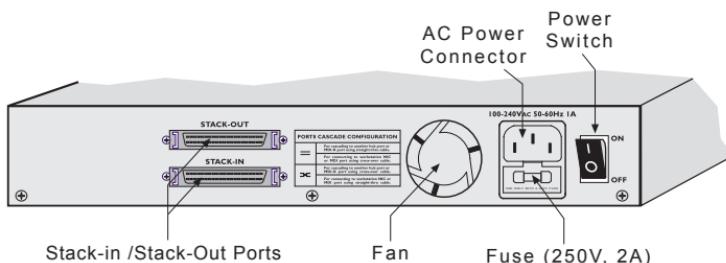
### Notes on MDI and MDI-X Ports

MDI (Media Dependent Interface) is the standard that defines the mechanical and electrical configuration of a UTP port. For any two devices to communicate with each other, the transmitter of one device must be connected to the receiver of the other device.

Switch Position	Port Configuration	For Connection to another Hub Port (MDI-X)	For Connection to a Network Adapter (MDI)
	MDI-X	Use Crossover Cable	Use Straight-Through Cable
	MDI	Use Straight-Through Cable	Use Crossover Cable

*Table 3-1MDI & MDI-X Configuration*

## Rear Panel



*Fig. 3-2 Rear Panel*

## Power Switch

The AC Power switch turns the unit ON or OFF. If the PWR LED does not light up once the unit has been turned on, try the procedures below (in the following order):

1. Try a different AC power outlet.
2. Check the external fuse located at the back of unit (below the AC power connector). If the fuse is blown, replace it with the spare fuse provided with the unit. (See Fuse Compartment display in Figure 3-3)
3. The power supply may be defective. Return the unit for replacement.

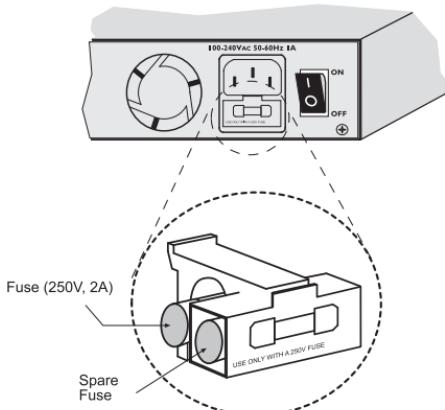
**WARNING: For safety reasons, DO NOT attempt to open and service the unit. There are no user-serviceable components inside.**

## AC Power Connector

The Fast EtheRx dual-speed hubs use 100-240VAC internal power supplies. Connect the AC power cord from the back of the unit to an AC electrical outlet.

## Fuse

The Fast EtheRx dual-speed hub comes equipped with one external fuse and one spare fuse. Both fuses are in a fuse holder located just below the AC power connector on the back of the unit. Both fuses are rated 250V/2A max.

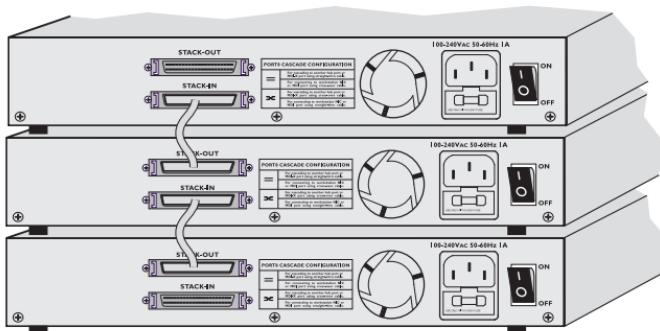


*Fig. 3-3 Fuses*

## Fan Unit(s)

The Fast EtheRx dual-speed hubs use independent cooling fans for optimum airflow to safeguard the unit from unnecessary heat exposure.

## Stack-In / Stack-Out Ports



*Fig. 3-4 Stacking Configuration*

The Fast EtheRx stackable hub uses stacking ports located on the back of the unit to stack up to a maximum of four hubs.

**IMPORTANT: The KND2415TX can only be stacked with other KND2415TX units. Stacking the unit with any other model hub may cause damage to the units.**

Follow the directions below on stacking these hubs together:

1. Power down the Fast EtheRx hub(s).
2. Locate the 50-pin shielded stacking cable included with your package contents.
3. Plug one end of the cable into the port labeled, “Stack-Out” on the first hub.
4. Plug the other end of the cable into the “Stack-In” port on the second hub.
5. Repeat steps 2 through 4 for stacking up to a maximum of four (4) hubs.

Kingston’s Stack-n-Play™ feature offers greater scalability to add UTP ports without the need to configure ID or termination switches. When configured as a stack, the Fast EtheRx stackable hubs are recognized as a single unit on the network. By stacking hubs together, you can expand the total number of UTP ports up to 96 ports.

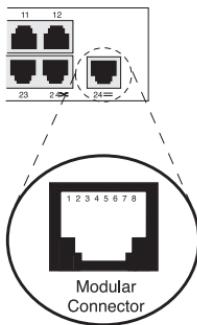


## **Appendices**

## Appendix A Pin Assignments

### UTP Port Pin Assignments

UTP Ports use RJ-45 Unshielded Twisted Pair (UTP) cabling. RJ-45 modular plugs and their pin numbers and wiring assignments are listed below. Twisted-Pair cables can be wired with either Straight-Through or Crossover pin assignments. Both wiring schemes are mentioned in “Appendix B Cabling Guidelines” for reference in creating a twisted-pair cable.



*Fig. A-1 RJ-45 Connector Pin Numbers*

Pin Number	MDI-X / $\infty$	MDI / $\equiv$
1	Receive Data +	Transmit Data +
2	Receive Data -	Transmit Data -
3	Transmit Data +	Receive Data +
4,5	Not Used	Not Used
6	Transmit Data -	Receive Data -
7,8	Not Used	Not Used

*Table A-1 UTP Pin Assignments*

(NOTE: For further details, refer to **Notes on MDI & MDI-X** on page 5)

## Appendix B Cabling Guidelines

### UTP Cable Type

When installing network cables, the following table shows appropriate cabling guidelines for 100BASE-TX Fast Ethernet architecture.

Cabling Components	100BASE-TX
Trunk and Patch Cable Type:	4-Pair 100Ω UTP CAT 5 (only 2 pairs used)
Modular Plug:	8-Pin RJ-45 CAT 5 only
Patch Panel:	8-Pin RJ-45 CAT 5 only

*Table B-1 Network Cable Guidelines*

(NOTE: All UTP cables come in both solid and stranded filament. Solid filament cables are more rigid and usually intended for trunk cabling. Stranded filament cables are more pliable and generally targeted for patch cables. For proper termination, use the correct RJ-45 connector, as they differ for each type of cable.)

### UTP Cable Wiring

UTP cables are wired based on one of two standard pin configurations: **Straight-Through** and **Cross-Over**. 100BASE-TX uses only Category-5 UTP cables with four pairs of wire as illustrated below in Tables B-2 and B-3.

#### Straight-Through Configuration

Pin Number	Pin Number
1 (TRX+)	1 (TRX+)
2 (TRX-)	2 (TRX-)
3 (RCV+)	3 (RCV+)
6 (RCV-)	6 (RCV-)
4, 5, 7, 8	Not Used

*Table B-2 Straight-Through Wiring*

#### Cross-Over Configuration

Pin Number	Pin Number
1 (TRX+)	3 (RCV+)
2 (TRX-)	6 (RCV-)
3 (RCV+)	1 (TRX+)
6 (RCV-)	2 (TRX-)
4, 5, 7, 8	Not Used

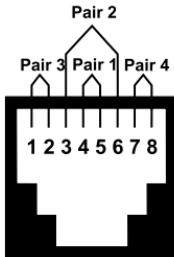
*Table B-3 Cross-Over Wiring*

## UTP Cable Wiring Standards

There are two governmental agencies: the Electronic Industry Association (EIA) and the Telecommunications Industry Association (TIA), which set the standard for all cable wiring requirements for commercial buildings.

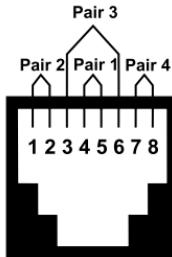
With the advent of 100Mb/s networking products, it is best to use higher quality CAT 5 cables like Belden or Helix as well as CAT 5-compliant patch panels, patch cables, and connectors while following the EIA/TIA wiring standards. 100 W UTP CAT 5 type cables use 4-pair UTP wiring.

Refer to the illustrations below for 4-pair wiring using either T568A (Fig. B-1) or T568B (Fig. B-2) wiring standards. Both T568A and T568B wiring is compatible with 10BASE-T and 100BASE-TX and require no special configurations, but for premise wiring, stick to one wiring standard. Mixing T568A and T568B wiring schemes may cause or lead to potential problems.



**T568A**

*Fig. B-1 4-Pair T568A Wiring*



**T568B**

*Fig. B-2 4-Pair T568B Wiring*

T568A	Pairs	Strand	Solid
Pin 1	Pair 3	Blue	White/Green
Pin 2	Pair 3	Orange	Green/White
Pin 3	Pair 2	Black	White/Orange
Pin 4	Pair 1	Red	Blue/White
Pin 5	Pair 1	Green	White/Blue
Pin 6	Pair 2	Yellow	Orange/White
Pin 7	Pair 4	Brown	White/Brown
Pin 8	Pair 4	White	Brown/White

*Table B-4 4-Pair T568A Wiring*

T568B	Pairs	Strand	Solid
Pin 1	Pair 2	Black	White/Orange
Pin 2	Pair 2	Yellow	Orange/White
Pin 3	Pair 3	Blue	White/Green
Pin 4	Pair 1	Red	Blue/White
Pin 5	Pair 1	Green	White/Blue
Pin 6	Pair 3	Orange	Green/White
Pin 7	Pair 4	Brown	White/Brown
Pin 8	Pair 4	White	Brown/White

*Table B-5 4-Pair T568B Wiring*

## UTP Cable Rating Codes

UTP cables meet different UL-NEC requirements based on cable-jacket quality. Below is an explanation of the rating codes for each cable type.

**UL** – The National Electrical Code (NEC), published by the National Fire Protection Association (NFPA), details advisory safety considerations for electrical wiring. NEC Article 800 Communications Cables are manufactured to meet these different cable types.

1. **CMP** – Cables meeting type CMP requirements are suitable for installation in ducts and plenums without the use of conduit. These cables are designed for fire resistance and low-smoke producing characteristics.
2. **CMR** – Riser type cables are engineered to prevent the spread of fire from floor to floor and are suitable for vertical shaft applications.
3. **CM** – Cables for general building wiring. CM cables are used in areas other than plenums and risers. These cables are resistant to the spread of fire and pass the UL 1581 Vertical Tray Flame Test.
4. **MP, MPR & MPP** – Within Article 800, the Multi-purpose Cables Category allows conditional substitutions between different cable types & are restricted by number, AWG size and stranding of the cable conductors.

## Terms You Should Be Familiar With

1. **BACKBONE WIRING** – The physical/electrical interconnections between telecommunications closets and equipment rooms.
2. **COMPLIANCE** – A wiring device that meets all characteristics of a standard is said to be in compliance with that standard.
3. **PREMISE WIRING** – The entire wiring system on the premises especially the supporting wiring that connects the communications outlets to the network interface jack.
4. **NEAR-END CROSSTALK (NEXT)** – In wires packed together within a cable, the signals generated at one end of the link can flush out the weaker signals coming back from the recipient.

## Appendix C Specifications

Compliance:	IEEE 802.3u 100BASE-TX Standard IEEE 802.3i 10BASE-T Standard IEEE 802.3 CSMA/CD Ethernet Standard
Media Interface:	24 auto-negotiating 10/100 Mbps UTP Ports
Connector Type:	Female RJ-45
Cable Type:	UTP 26 to 22 AWG
Cable Grade	
10BASE-T:	CAT 3, 4, 5 or better
1000BASE-TX:	CAT 5 or better
Max. Segment Length:	100 meters (328 feet)
Number of Segments:	2 segments, 10 Mbps or 100 Mbps
Inter-repeater Link	
Number of Repeaters:	2 Class <b>II</b> repeaters max.
Cable Length:	5 meters (16.4 feet) max. between repeaters
Diagnostic LEDs:	<ul style="list-style-type: none"> <li><input type="radio"/> 1 LED for Power Indicator (steady green),</li> <li><input type="radio"/> 1 LED for 10 Mbps Collision Detection (flashing amber),</li> <li><input type="radio"/> 1 LED for 100 Mbps Collision Detection (flashing amber),</li> <li><input type="radio"/> 24 LEDs for 100BASE-TX Speed Detection (steady green).</li> </ul>
Additional Stacking:	Up to 4 max.
Stacking Cable:	50 pins shielded cable
Uplink Port:	Port 24 supports cross-over or straight-through cabling
<b>Environmental</b>	
Operating Temperature:	0°C to 45°C (32°F to 113°F)
Storage Temperature:	-20°C to 60°C (-4°F to 140°F)
Relative Humidity:	10% to 90% non-condensing
<b>Electrical</b>	
Input AC Voltage:	100VAC to 240VAC, 50Hz/60Hz Auto-sensing
Output DC Voltage:	5VDC/8A
Power Consumption:	19.20 Watts max.
<b>Physical</b>	
Dimension (HxWxD):	1.70" x 17.32" x 7.90" (43.2mm x 440mm x 200.6mm)
Weight:	6.2 lbs (2.81 kg)
<b>Certification</b>	
EMI Standards:	FCC Class A, CE CISPR A, C-Tick
EMC Standards:	EN55022, IEC801-2, IEC801-3, IEC801-4
Low Voltage Directive:	EN60950
Safety Standards:	UL, cUL, TUV

## Appendix D Commonly Asked Questions

### Class ① vs. Class ② 100BASE-TX Fast Ethernet Repeaters

There are currently two classes of Fast Ethernet repeaters, defined as Class ① and Class ②.

**Class ①:** in a maximum length segment topology, only **one** Class ① repeater may exist between any two nodes within a single collision domain.

**Class ②:** in a maximum length segment topology, **two** Class ② repeaters may exist between any two nodes within a single collision domain.

### Will 100BASE-TX run on Category 3 cable?

No! Category 3 (CAT 3) cabling even in short lengths generates too much near end crosstalk for 100BASE-TX networks. The IEEE 802.3u 100BASE-TX Fast Ethernet standard requires Category 5 100 W UTP or 100 W STP which complies with ISO/IEC 11801:1995.

### What is Category 5?

Category 5 (CAT 5) is a further extension of the EIA/TIA-568 cabling system to 100 MHz. Category 5 components (i.e., UTP trunk and patch cables, modular plug, and patch panel, etc.) are defined by EIA/TIA-568, but with the characterizations extended to 100 MHz by TSB-36 and TSB-40. The cable grades are categorized as follows:

- **Category 3:** up to 16 MHz
- **Category 4:** up to 20 MHz.
- **Category 5:** up to 100 MHz.

### Category 5 Compliance vs. Category 5 Performance?

Having CAT 5 components in your network installation does not necessarily achieve full Category 5 performance. To achieve any category-rated performance, make sure all cabling components are at least of the minimum category required.

To achieve full CAT 5 performance, all components must be CAT 5 compliant and terminated properly according to EIA/TIA-568 TSB-36 and TSB-40 guidelines.

## What are the Guidelines for Proper Termination?

It is important to maintain the twists of the cable as close to the termination on the outlet as possible, to avoid NEXT (Near End Cross Talk) and to maintain the transmissions characteristics of the Category. Category specifications require that pair twisting be maintained to within the following distances from the outlet termination:

- **Category 3 maximum allowed untwisting:** 3 inches
- **Category 4 maximum allowed untwisting:** 1 inch
- **Category 5 maximum allowed untwisting:** 1/2 inch

## Can I mix CAT 3 and CAT 5 cabling in the same building?

Yes, but keep in mind, you will not have CAT 5 performance. It is a good idea to keep the lines separated when installing any new lines. Use CAT 5 UTP cabling only.

## Can a Four-Pair CAT 5 cable support two 100BASE-TX devices?

Although only two pairs are used in the standard four-pair CAT 5 UTP cable, it is not recommended because it exceeds the specifications outlined by IEEE 802.3u.

## Appendix E Mounting Templates

The Fast EtheRx dual-speed hubs can be stationed on a flat surface using the four rubber feet provided, or mounted in a standard 19" rack by using the mounting brackets and 4 thumb screws provided with the unit.

### Rubber Feet for Desktops

The Fast EtheRx dual-speed hubs come with rubber feet that may be applied to the bottom of the unit for desktop surface installations. The 4 rubber feet have peel-off adhesive backing. Remove the backing and attach the feet to the bottom of the switch.

### Brackets for Rack Mounting

The Fast EtheRx dual-speed hubs can also be mounted in a standard 19" rack using the brackets included with the unit. A rack mount installation uses a standard 19" dimension. Align the holes in the brackets with the holes on each side of the unit. Use the 8 screws provided to secure the brackets to the Fast EtheRx dual-speed hub. See Figure E-1 below:

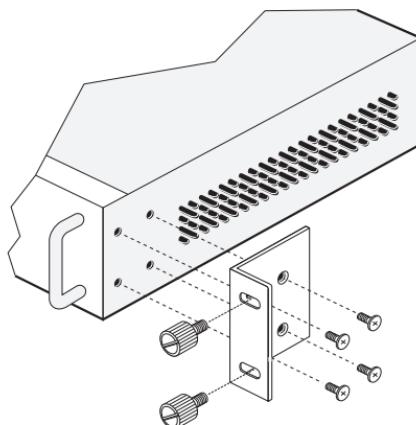


Fig. E-1 Attaching the Mounting Brackets

## Appendix F Warranties and Notices

### Limited Warranty Statement

KINGSTON TECHNOLOGY COMPANY (“Kingston”) warrants that this product is free from defects in material and workmanship. Subject to the conditions and limitations set forth below, Kingston will, at its option, either repair or replace any part of this product which proves defective by reason of improper workmanship or materials. Repair parts or replacement products will be provided by Kingston on an exchange basis, and will either be new or refurbished to be functionally equivalent to new.

This warranty does not cover any damage to this product that results from accident, abuse, misuse, natural or personal disaster, or any unauthorized disassembly, repair or modification.

### Duration of Warranty

**Lifetime Warranty:** The following Kingston products are covered by this warranty for life: memory modules and expansion boards, networking adapters, networking hubs without cooling fans (excluding the power supply), and microprocessor upgrade products.

**Seven Year Warranty:** The following Kingston products are covered by this warranty for a period of seven years from the date of original retail purchase: all core storage enclosures (including the power supply), cables, terminators, and related accessories. Under certain agreements where core products are slightly modified (e.g. paint, handle, etc.) by Kingston at the customer’s request, the product will be covered for a period of seven years for repair only. Storage products that are custom designed and /or incorporate component-level modification by Kingston in order to meet specific customer requests, will be negotiated with the applicable customer on a per case basis.

**Five Year Warranty:** The following Kingston products are covered by this warranty for a period of five years from the date of original retail purchase: the power supply in networking hubs without cooling fans; Flash memory cards (e.g. CompactFlash, ATA Flash, and Linear Flash); solid state PC Card (PCMCIA) adapters, PC Card Readers and all other Kingston products (other than those products covered by a three-year, two-year, or one-year warranty, as provided below).

**Three Year Warranty:** The following Kingston products are covered by this warranty for a period of three years from the date of original retail purchase: networking hubs with cooling fans (including the power supply).

**Two Year Warranty:** The following Kingston products are covered by this warranty for a period of two years from the date of original retail purchase: Solid State Floppy Disk Cards (SSFDC), and Winchester hard disk drives in a 2.5 inch, 3.5 inch or 5.25 inch form factor.

**One Year Warranty:** The following Kingston products are covered by this warranty for a period of one year from the date of original retail purchase: Winchester hard disk drives in a 1.8 inch form factor, optical storage products, and magnetic tape storage products.

Rev. 3/99

## **Warranty Claim Requirements**

To obtain warranty service, return the defective product, freight prepaid and insured, to your local authorized Kingston dealer or distributor, or to the Kingston factory service center located at 17600 Newhope Street, Fountain Valley, California 92708, U.S.A. You must include the product serial number (if applicable) and a detailed description of the problem you are experiencing. You must also include proof of the date of original retail purchase as evidence that the product is within the applicable warranty period. If you return the product directly to the Kingston factory, you must first obtain a Return Material Authorization ("RMA") number by calling Kingston Customer Service at (714) 438-1810, and include the RMA number prominently displayed on the outside of your package. Products must be properly packaged to prevent damage in transit.

## **Free Technical Support**

Kingston provides free technical support. If you experience any difficulty during the installation or subsequent use of a Kingston product, please contact Kingston's Technical Support department prior to servicing your system.

Kingston Technical Support can be reached in the U.S. at (714) 435-2639 or toll-free at (800) 435-0640 (U.S. and Canada only). Kingston European Technical Support can be reached from within Europe at 00800 8123 8123 or by fax at 00800 8823 8823.

This warranty covers only repair or replacement of defective Kingston products, as provided above. Kingston is not liable for, and does not cover under warranty, any costs associated with servicing and/or the installation of Kingston products.

## **Disclaimers**

The foregoing is the complete warranty for Kingston products and supersedes all other warranties and representations, whether oral or written. Except as expressly set forth above, no other warranties are made with respect to Kingston products and Kingston expressly disclaims all warranties not stated herein, including, to the extent permitted by applicable law, any implied warranty of merchantability or fitness for a particular purpose. In no event will Kingston be liable to the purchaser, or to any user of the Kingston product, for any damages, expenses, lost revenues, lost savings, lost profits, or any other incidental or consequential damages arising from the purchase, use or inability to use the Kingston product, even if Kingston has been advised of the possibility of such damages.

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## F.C.C. Certification

This device has been tested and found to comply with limits for Class B digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received; including interference that may cause undesired operation.

## CE Notice

The official CE symbol indicates compliance of this Kingston Technology product to the EMC directive of the European Community. The CE symbol indicates that this Kingston product meets or exceeds the following standards:

**EN50081-1** “Electromagnetic Compatibility-generic emissions standard”

**EN55022**: “Limits and methods of measurement of radio interference characteristics.”

**EN50082-1** “Electromagnetic Compatibility-generic immunity standard”

**IEC 801-2**: “Electrostatic discharge requirements”

**IEC 801-3**: “Radiated immunity requirements”

**IEC 801-4**: “Electrical fast transient requirements”

**EN60950** “Low Voltage Directive (LVD)”

**Declaration of CE Conformity** in accordance with the above standards has been made and is on file at Kingston Technology.



## C-Tick Certification

**AS/NZS 3548** “Information Technology Equipment”

**Declaration of C-Tick Conformity** in accordance with the above standards has been made and is on file at Kingston Technology.

